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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,372	12/15/2000	Min Jiang	IMRAA.013DVI	1781

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EXAMINER

ZAHN, JEFFREY N

ART UNIT PAPER NUMBER

2828

DATE MAILED: 10/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s) N .

09/738,372

Applicant(s)

JIANG ET AL.

Examiner

Jeffrey N Zahn

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Priority Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-28,33 and 34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-28,33 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22-28 and 33-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: (1) pumping a gain medium within a resonant Fabry-Perot laser cavity; (2) generating Q-switched mode-locked laser pulses using a saturable absorber located within said resonant Fabry-Perot optical cavity; (3) absorbing said Q-switched laser pulses by insertion of a Two-Photon Absorber within the said resonant Fabry-Perot optical cavity; and (4) outputting a cw mode-locked laser pulse from the said resonant Fabry-Perot optical cavity.

These steps are essential because they are (1) necessary to generate a cw mode-locked laser pulses as disclosed by the applicant and (2) these steps are not obvious to someone of skill in the art of lasers, as related to claim interpretation, without reference to the specification. Because the claims lack the specified steps, they are indefinite.

In addition, it is unclear from the claim language how a cw mode-locked laser pulse is generated with the claimed steps. Specifically, what function the steps have as related to the generation of the cw mode-locked laser pulses.

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Regarding Claim 23, it is unclear from the claim language what is being claimed, i.e. how the claimed invention is q-switched and q-switched suppressed.

Regarding Claim 34, in addition to the discussion above, Claim 34 specifies an "and" without any further recital of steps. Accordingly, this claim is indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22-28 and 33-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Wayne et al. (US 4176327).

Regarding Claims 22, 28, 33 and 34, Wayne et al. discloses a method of generating laser pulses comprising generating Q-switched mode-locked laser pulses (col. 4, line 66 – col. 5, line 27; see also abstract) and suppressing q-switching (col. 6, lines 28-50; see also abstract). In addition, the method disclosed by Wayne et al. is a method of generating laser pulses in a continuous wave mode locked fashion (abstract); however, this limitation of the claimed invention is not given patentable weight because the body of the claim does not support a cw mode-locked laser pulse, i.e., there is no claimed step to manipulate any structural feature of the invention to generate a cw mode-locked laser pulse.

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Regarding Claim 23 and 24, Wayne et al. discloses a method that includes absorption of q-switched laser pulses within their laser cavity (col. 5, line 47- col. 6, line 27).

Regarding Claim 26 and 27, Wayne et al. discloses a method that includes pumping a gain medium (24) with a laser cavity (Fig. 1) and absorbing optical radiation from said gain medium in a Fabry-Perot structure (Fig. 1; see also col. 4, line 65- col. 5, line 46) that resonates.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wayne et al. in view of Hordvik (Pulse Stretching Utilizing Two-Photon-Induced Light Absorption, IEEE Journal of Quantum Electronics, April 1970).

Regarding Claim 25, Wayne et al. lacks the step of suppressing Q-switching comprising two-photon absorption. Hordvick teaches the use of Two-Photon Absorption to suppress Q-switching as a means to enable pulse stretching (Abstract; see also col. 1, 2nd para. of Introduction). It would have been obvious at the time of the invention to someone of ordinary skill in the art of lasers to modify Wayne et al. to include absorbing Q-switched laser pulses using a Two-Photon Absorber to lengthen the pulses. It is well

known in the art of lasers that increasing the pulse length of a laser pulse is valuable for many laser applications that involve increased peak power.

Response to Arguments

Applicant's arguments filed 27 September 2001 have been fully considered but they are not persuasive.

Regarding 35 U.S.C. 112, second paragraph rejections:

Applicant makes the argument that "Applicant did not disclose in the specification of this application or in the statements of record that the elements identified by the Examiner are 'essential.'" (page 2, last para.) Therefore, all rejections based on "missing essential elements" must be withdrawn.

The determination of "essential elements" required to be claimed to support the enablement of the claims and to adequately describe the metes and bounds of the invention to one of ordinary skill in the art is not a subjective test on the part of the Applicant. The standard is what "one of ordinary skill in the art" would understand to be essential elements.

In response to applicant's arguments, the recitation of "generating CW mode – locked laser pulses" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88

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USPQ 478, 481 (CCPA 1951). Furthermore, Claims 22-28 and 33-34 do not recite adequate steps and inter-step relationships to support a method of generating CW mode-locked laser pulses"; therefore, the preamble has not been given any patentable weight.


Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Skolnick et al (US 3764937), Miliam et al. (US 3866141), Barrett et al. (US 4227159), Wayne et al. (4528668), Esterowitz et al. (US 4965803), Esterowitz et al. (US 5272708) and Cunningham et al. (US 6141359).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey N Zahn whose telephone number is 703-305-3443. The examiner can normally be reached on M-F: 8:30-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


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Jeffrey Zahn

September 24, 2002

A handwritten signature in black ink, appearing to read "Jeff Zahn", is written over the printed name and date.